Chapter 6

# Limitations of the Assessment

## Opportunities for Improvement of Future Assessment Efforts

This assessment was limited in duration, scope, detail, and analysis level due to constraints in budget, time, access, and overall resources. Where data are limited, working hypotheses are offered along with recommendations to test or improve the knowledge base. Specific limitations are presented below to put the assessment into context and to provide guidance to improve future data collections and analysis.

The California Department of Fish and Game's habitat inventory surveys provided the data for instream conditions, the Ecological Management Decision Support Reach Model, the Limiting Factors Analysis, and the Restoration Recommendations and Priorities. None of the subbasins were surveyed 100 percent. The following lists the amount of the Subbasin surveyed: North Fork, 81 percent; Rockpile, 39 percent; Buckeye, 37 percent; Wheatfield 45 percent; and the Mainstem/South Fork, 31 percent. Future use of these data should reflect the amount un-surveyed as well as surveyed.

The California Geological Survey's landslide and geomorphic analyses were limited to aerial photo interpretation primarily from two sets of photos: 1984 and 1999/2000, and limited field verification. A limited number of 1965 aerial photographs were reviewed briefly for only a few selected portions of the watershed. Limited aerial photo coverage does not bracket temporal distribution of important watershed events, which may not be evident in photos taken years after the fact. Field checking of interpretations was limited.

At the analysis scale of 1:24,000, the detection of geologic features smaller than 100 feet in the largest dimension is poor.

Detailed site level mapping of landslides and sediment delivery were conducted by outside parties in various portions of the watershed. However, time and staffing constraints prevented full evaluations of those data.

Existing geologic mapping of the Rockpile Subbasin is limited to the Geologic Map of the Santa Rosa Quadrangle (Wagner and Bortugno 1999), which was mapped at a scale of 1:250,000 (2-degree sheet). The presence and locations of geologic features in this area were inferred from surrounding areas where more detailed mapping was available.

California Department of Forestry and Fire Protection's land use analysis used aerial photos exclusively. Sediment sources found in earlier photo sets were not field reviewed to ascribe current comparative condition.

Localized point source channel aggradations and meandering flows observed shortly after the winter rains during the late 1950s and early 1960s were not systematically compared sequentially through time to detail evolving stream channel morphology. Only spot point comparisons with 1984, 1988, and 1999

photos were done depending on where damage was observed from winter rains during the late 1950s and early 1960s.

There was only time to compare the broadest contrasts between 1950s/1960 era impacts with declining habitat conditions. More subtle habitat changes to properly characterize recent land use activities requires a far larger and detailed data base to make significant conclusions.

North Coast Regional Water Quality Control Board's water chemistry analysis was limited to available U.S. Environmental Protection Agency StoRet data for the period April of 1974 to June of 1988 at three locations, and three samples obtained by NCRWQCB at five locations in 2001. The sampling frequency and small number of locations did not allow for any detailed temporal analysis.

NCRWQCB did not have turbidity nor suspended solids data, though considers them critical to watershed analysis. The absence of those data and any analysis of suspended loads and turbidity are limitations in this assessment.

Pesticide data were not available from StoRet, nor collected in the NCRWQCB sampling of 2001.

NCRWQCB analyzed water temperature and in-channel data supplied by the Gualala River Watershed Council (GRWC), Gualala Redwoods, Inc. (GRI), and from NCRWQCB files containing Coastal Forest Lands, Ltd data for the period from 1992 to 2001. Not all locations received sampling throughout that period, limiting the ability to compare across years and among sites.

In-channel data and some temperature data were provided as summary statistics (medians, means, and maximums), limiting the ability to factor variability into the analysis, and not allowing for independent checks on the data quality.

The temperature range used for "fully suitable" of 50-60 F was developed as an average of the needs of several cold water fish species, including coho salmon and steelhead trout. As such, the range does not represent fully suitable conditions for the most sensitive cold water species (usually considered to be coho salmon).

Water temperature data analysis did not include probability of exceedence from cumulative distribution plots, or hours of exceedance of a threshold. This analysis was limited by not having raw data for all sites, obtaining raw data late in the analysis, and data interface problems. Analysis of temperature information is without knowledge of the extent of a thermal reach upstream of the continuous data logger.